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10/617,625	07/10/2003	Ulug Bayazit	352000-902002	4266

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DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

EXAMINER
VO, TUNG T

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/617,625	**Applicant(s)** BAYAZIT, ULUG	
	Examiner Tung Vo	**Art Unit** 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08/13/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-22 and 28-41* is/are pending in the application.

4a) Of the above claim(s) *1-16 and 18-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-22 and 28-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/10/2003*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 17-22, and 28-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arvind et al. (US 5,214,507) in view of Katata et al. (US 5,631,644).

Re claims 17 and 36, Aravind discloses a signal coding apparatus, comprising:

a partitioning component that divides a field of data into a plurality of data groups, macroblocks (col. 3, lines 47- 57), wherein respective ones of said plurality of data groups further comprise a spatial data content (8x8 sub-blocks, 16x16 sub-blocks are in spatial domain);

a transform component (110 of fig. 1) that encodes respective ones of said plurality of data groups, said data groups represented by respective transform coefficients (DCT coefficients), and wherein respective ones of said plurality of data groups further comprise a coding mode (PRED of fig. 1, determining coding mode);

a quantizing component (120 of fig. 1) that compresses said respective transform coefficients (110 of fig. 1) representing said plurality of data groups (e.g. fig. 2) in response to a unique estimate for a number of coding bits (col. 2, lines 29-65; 115 of fig. 1);

wherein the encoder (fig. 1) for encoding the quantized transform coefficients to produce an encoded image according to MPEG standard;

a rate control component (105 of fig. 1) that maps each of a plurality of unique pairs of data (a prestored empirically derived model of the relationship between a predetermined plurality of perceptual noise sensitivity (PNS) classes, the psycho-visual quality levels (Q) and the values of the quantization parameter (qp)), pairs of data being characterized as a first component of particular class data (PNS) paired with a second component of particular quantization parameter data (qp, Table 1), to the unique estimate for a number of coding bits in response to the compressed quantized transform coefficient (the encoded image) (col. 2, lines 29-32, note estimates of the number of bits expected in the encoded image, when the image is encoded to achieve an intended psycho-visual quality level, are developed), wherein a value representing an actual quantity of coding bits observed for previously coded data entities is into the estimation process (BUFFER FULLNESS of fig. 1).

It is noted that Avarind does not particularly teach a compressing component for compressing a quantized transform coefficient as claimed.

However, Katata the MPEG encoder (fig. 4) comprising a compressing component (5 of fig. 4) for compressing a quantized transform coefficient (3 and 4 of fig. 4).

Taking the teachings of Avarind and Katata as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Katata into the signal coding apparatus of Avarind allow the encoder to encode image information efficiently in order to improve efficiency of recording and transmitting of image information.

Re claims, 18, 28, 33, and 37, Avarind discloses wherein said features of said groups of data comprises data indicating pixel luminance intensity values and corresponding pixel chrominance intensity values (col. 3, lines 47-55).

Re claims 19, 29, 34, and 38, Avarind further discloses wherein said transform component comprises a two-dimensional orthogonal transform (DCT 110 of fig. 1).

Re claims 20, 31, 35, and 39, Avarind teaches MPEG-standard coder that would obviously comprise a run-length coder and a variable length coder.

Re claims 21, 30, and 40, Avarind teaches wherein said orthogonal transform comprises a discrete cosine transform operating on one of the intensity values of the pixels of a group of data (DCT, 110 of fig. 1), and the error of the temporal prediction from one or more temporally local groups of data (PRED of fig. 1, motion compensation performs temporal prediction errors).

Re claim 22, 32, and 41, Avarind further discloses wherein said quantizing component comprises a uniform scalar quantizer (col. 6, lines 1-15, the qp values for those PNS columns are increased until a uniform distribution of the perceived noise is achieved throughout the image)

3. Claims 17-19, 21, and 28-30, 33-34, 36-38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US 6,430,222 B1) in view of Singhal et al. (US 5,333,012).

Re claims 17 and 36, Okada teaches a signal coding apparatus (fig. 2), comprising: a partitioning component (14 of fig. 2, details in figure 3) that divides a field of data into a plurality of data groups (macroblocks) (fig. 4), wherein respective ones of said plurality of data groups further comprise a spatial data content (SPECIFIC BLOCK MAP and SPECIFIC AREA BLOCKS are in frame as a video signal in a spatial domain, so the SPECIFIC BLOCK MAP and SPECIFIC AREA BLOCKS would obviously be spatial data content);

a transform component (3 of fig. 2) that encodes respective ones of said plurality of data groups, said data groups represented by respective transform coefficients (the DCT obviously

generates coefficients of the macroblocks; col. 7, lines 62-63) , and wherein respective ones of said plurality of data groups further comprise a coding mode (16 of fig. 2, coding mode determining section for determining inter and intra modes based on the macroblocks of the frame);

a quantizing component (4 of fig. 2) that compresses said respective transform coefficients representing said plurality of data groups in response to a unique estimate for amount of coding (17, 4, and 5 of fig. 2; note coding control section 17 controls quantizer 4, based on the mode control information, so that the current frame will have the predetermined amount of coding; wherein the predetermined amount of coding is adjusted (increase or decreased), col. 11, lines 57-col.12, line 5);

a compressing component (5 of fig. 2) that further compresses said quantized transform coefficients; and

a rate control component (17 of figs. 2 and 5) that maps each of a plurality of unique pairs of data (43 of figs. 5 and 8, as illustrated in figure 8, each of a plurality of unique pairs of data is a specific area block map extracted by the specific area extracting section (14 of figs. 2 and 4) and initial quantization stepsize value computed by the initial stepsize computing section (72 of fig. 8)),

the unique estimate for a number of amount of coding in response to the quantized transform coefficients (col. 12, lines 20-52),

pairs of data being characterized as a first component of particular class data (SPECIFIC AREA BLOCK MAP of fig. 8) paired with a second component of particular quantization

parameter data (INTIAL QUANITZATION STEPSIZE is outputted from THE INITIAL QUANTIZATION STEPSIZE COMPUTING SECTION, 72 of fig. 8),

wherein a value representing an actual quantity of coding bits (THE CODING AMOUNT INFORMATION from coding section 5 of figure 2) from observed for previously coded data entities (encoded data from coding section 5 of fig. 2) is into the estimation process (17 of fig. 2).

It is noted that Okada does not particularly disclose a number of coding bits as claimed.

However, Singhal teaches determining a number of coding bits (10 of fig. 2, see details in fig. 3, bit allocation processor (27 of fig. 2) for determining the number of coding bits).

Therefore, taking the teachings of Singhal and Okada as a whole, it would have been obvious to one of ordinary skill in the art to modify the teachings of Singhal into the apparatus of Okada to permit improved picture quality and network efficiency by allocating bits and setting quantizer step size based upon buffer occupancy and the texture of the signal being coded and by maintaining a target bit rate for each slice or frame by using a recursive control method.

Re claims 18, 28, 33, and 37, Okada further teaches wherein said features of said groups of data comprises data indicating pixel luminance intensity values and corresponding pixel chrominance intensity values (22-24 of fig.3, col. 9, lines 15-53).

Re claims 19, 29, 34, and 38, Okada further discloses wherein said transform component comprises a two-dimensional orthogonal transform (col. 7, lines 55-66).

Re claims 21, 20, and 40, Okada further discloses wherein said orthogonal transform comprises a discrete cosine transform operating on one of the intensity values of the pixels of a group of data (col. 7, lines 55-64), and the error of the temporal prediction from one or more temporally local groups of data (12 of fig. 2).

4. Claims 20, 22, 31-32, 35, 39, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US 6,430,222 B1) in view of Singhal et al. (US 5,333,012), and further in view of Cornog et al. (US 6,330,369).

Re claims 20, 22, 31-32, 35, 39, and 41, Okada further teaches wherein said compressing component comprises a variable length coder (5 of fig. 2), and quantization stepsize.

It is noted that the combination of Okada and Singhal does not particularly teach a run-length coder and a uniform scalar quantizer.

However, Cornog teaches a run-length coder (col. 1, lines 40-43) and a uniform scalar quantizer (fig. 3).

Taking the teachings of Okada, Singhal, and Cornog as a whole, it would have been obvious to one of ordinary skill in the art to modify the run length coder and uniform scalar quantizer of Cornog into the combined apparatus of Okada and Cornog for limiting data rate and image quality loss in lossy compression of sequences of digital images.

Response to Arguments

5. Applicant's arguments filed 08/13/2008 have been fully considered but they are not persuasive.

The applicant argues that Okada does not teach a rate control component that maps each of a plurality of unique pairs of data, pairs of data being characterized as a first component of particular class data paired with a second component of particular quantization parameter data, to a unique estimate for a number of coding bits in the remarks.

The examiner respectfully disagrees with the applicant. It is submitted that Okada teaches a rate control component (17 of figs. 2 and 5) that maps each of a plurality of unique pairs of data (43 of figs. 5 and 8, as illustrated in figure 8, each of a plurality of unique pairs of data is a specific area block map extracted by the specific area extracting section (14 of figs. 2 and 4) and initial quantization stepsize value computed by the initial stepsize computing section (72 of fig. 8), as the same applicant's disclosure, pairs q and Z, quantization and macroblocks), pairs of data being characterized as a first component of particular class data (SPECIFIC AREA BLOCK MAP of fig. 8, as macroblocks) paired with a second component of particular quantization parameter data (INTIAL QUANITZATION STEPSIZE is outputted from THE INITIAL QUANTIZATION STEPSIZE COMPUTING SECTION, 72 of fig. 8, q), to a unique estimate for a number of coding bits (73 of fig. 8, a unique estimate number of coding bits as quantization stepsize determines the coding bits), wherein a value representing an actual quantity of coding bits (THE CODING AMOUNT INFORMATION from coding section 5 of figure 2) from observed for previously coded data entities (encoded data from coding section 5 of fig. 2) is into the estimation process (17 of fig. 2). In view of the discussion above, the claimed limitation is unpatentable over Okada.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tung Vo/
Primary Examiner, Art Unit 2621